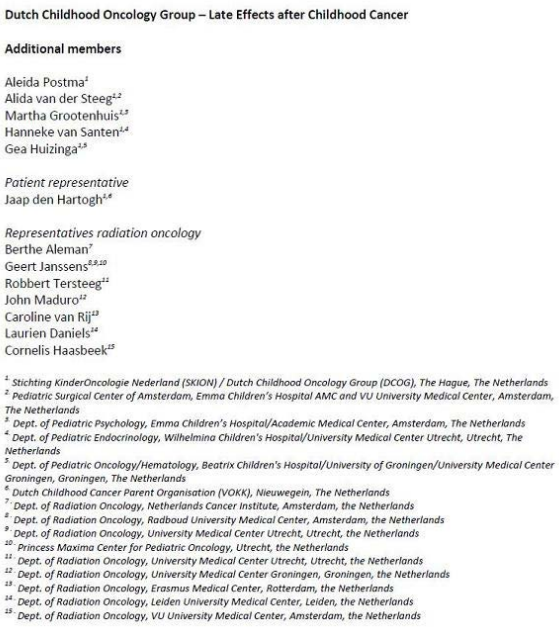
[3]Stichting KinderOncologie Nederland SKION / Dutch Childhood Oncology Group DCOG, The Hague, The Netherlands
[4]Beatrix Children's Hospital/University of Groningen/University Medical Center Groningen, Pediatric Oncology/Hematology, Groningen, The Netherlands
[5]University of Groningen/University Medical Center Groningen, Radiation Oncology, Groningen, The Netherlands
[6]Academic Medical Center, Medical Oncology, Amsterdam, The Netherlands
[7]VU University Medical Center, Pediatric Oncology/Hematology, Amsterdam, The Netherlands
[8]Sophia Children's Hospital/Erasmus Medical Center, Pediatric Oncology/Hematology, Rotterdam, The Netherlands
[9]Princess Maxima Center for Pediatric Oncology, Utrecht, The Netherlands
[10]Radboud University Medical Center, Pediatric Oncology and Hematology, Nijmegen, The Netherlands
[11]Willem-Alexander Children's Hospital/Leiden University Medical Center, Pediatric Stem Cell Transplantation, Leiden, The Netherlands
[12]Wilhelmina Children's Hospital/University Medical Center Utrecht, Pediatric Oncology and Hematology, Utrecht, The Netherlands
[13]Erasmus Medical Center, Internal Medicine, Rotterdam, The Netherlands
[14]Academic Medical Center, Medical Informatics, Amsterdam, The Netherlands
[15]Academic Medical Center, Radiation Oncology, Amsterdam, The Netherlands
[16]Netherlands Comprehensive Cancer Organisation, Registration, Utrecht, The Netherlands
[17]PALGA Foundation, Houten, The Netherlands

Purpose or Objective: The risk of colorectal adenomas (CRAs) in childhood cancer survivors (CCS) is unknown. In the general population and in individuals with cancer susceptibility syndromes, CRAs are associated with colorectal carcinoma (CRC) risk and this knowledge is the basis for colorectal cancer screening. To support recommendations for or against CRC screening among asymptomatic CCS, we aim to estimate the risk of histologically confirmed CRAs in a large cohort of 5-year CCS and to quantify the contribution of associated treatment-related factors.

Material and Methods: The Dutch Childhood Oncology Group-Late Effects After Childhood Cancer (DCOG LATER) cohort includes 6,168 five-year CCS treated between 1/1/1963 and 12/31/2001 in one of the seven Dutch pediatric oncology/hematology centers before age 18. Detailed information on prior cancer diagnosis and treatment was collected, including information on radiotherapy (RT) dose, field, and fractionation schedule and chemotherapy (CT) dose per drug. Subsequent CRAs were identified by linkage with the population-based Dutch Pathology Registry (PALGA) for follow-up years 1990-2014, a unique resource for case ascertainment without selection bias from self-reporting. Among patients with CRA we also ascertained the occurrence of CRC based on cancer registry linkage.

Results: At a median follow-up of 23 years (range: 5-52) since childhood cancer diagnosis and a median attained age of 30 years, we identified 60 patients with at least one histologically confirmed CRA, of which 37 had >1 CRA. Most common CRA histology was tubular adenoma, followed by tubulovillous adenoma. Median age at first CRA diagnosis was 39 years and median time from childhood cancer diagnosis to CRA diagnosis was 28 years. Most CRA patients had been treated for leukemia (23.3%) or lymphomas (20.0%). Eight CRA patients also developed a CRC. Preliminary univariate analyses showed an increased risk of CRA associated with abdominal/pelvic RT (odds ratio=2.7; 95% CI: 1.5-4.9).

Conclusion: This study shows a fairly high incidence of histologically confirmed CRAs in a relatively young population. However, these exploratory analyses need further in-depth medical file review to ascertain the potential for surveillance bias. More detailed analyses with multivariable risk models including RT dose and specific CT agents and the role of cancer susceptibility syndromes will be presented during the meeting. Also this study provides the baseline for a longitudinal assessment of CRA and CRC risk, as this population ages.



PO-0771

Temporal changes in pediatric radiation oncology: DCOG LATER childhood cancer survivor study

J. Kok[1], W. Dolsma[2,3], E. Van Dulmen-den Broeder[3,4], M. Van den Heuvel-Eibrink[3,5,6], J. Loonen[3,7], W. Tissing[3,8], D. Bresters[3,9], B. Versluys[3,10], H. Van der Pal[3,11], S. Neggers[3,12], N. Hollema[3], M. Van der Heiden-van der Loo[3], F. Van Leeuwen[3,13], F. Oldenburger[14], B. Aleman[15], G. Janssens[6,16,17], J. Maduro[18], R. Tersteeg[17], C. Van Rij[19], L. Daniels[20], C. Haasbeek[21], H. Caron[1,3], The DCOG LATER Study Group[3], L. Kremer[1,3], C. Ronckers[1,3]
[1]Academic Medical Center, Pediatric Oncology, Amsterdam, The Netherlands
[2]University of Groningen/University Medical Center Groningen, Radiation Oncology, Groningen, The Netherlands
[3]Stichting KinderOncologie Nederland SKION / Dutch Childhood Oncology Group DCOG, The Hague, The Netherlands
[4]VU University Medical Center, Pediatric Oncology/Hematology, Amsterdam, The Netherlands
[5]Sophia Children's Hospital/Erasmus Medical Center, Pediatric Oncology/Hematology, Rotterdam, The Netherlands
[6]Princess Maxima Center for Pediatric Oncology, Utrecht, The Netherlands
[7]Radboud University Medical Center, Pediatric Oncology and Hematology, Nijmegen, The Netherlands
[8]Beatrix Children's Hospital/University of Groningen/University Medical Center Groningen, Pediatric Oncology/Hematology, Groningen, The Netherlands
[9]Willem-Alexander Children's Hospital/Leiden University Medical Center, Pediatric Stem Cell Transplantation, Leiden, The Netherlands
[10]Wilhelmina Children's Hospital/University Medical Center Utrecht, Pediatric Oncology and Hematology, Utrecht, The Netherlands
[11]Academic Medical Center, Medical Oncology, Amsterdam, The Netherlands
[12]Erasmus Medical Center, Internal Medicine, Rotterdam, The Netherlands
[13]Netherlands Cancer Institute, Epidemiology, Amsterdam, The Netherlands
[14]Academic Medical Center, Radiation Oncology, Amsterdam, The Netherlands

[15]Netherlands Cancer Institute, Radiation Oncology, Amsterdam, The Netherlands
[16]Radboud University Medical Center, Radiation Oncology, Nijmegen, The Netherlands
[17]University Medical Center Utrecht, Radiation Oncology, Utrecht, The Netherlands
[18]University Medical Center Groningen, Radiation Oncology, Groningen, The Netherlands
[19]Erasmus Medical Center, Radiation Oncology, Rotterdam, The Netherlands
[20]Leiden University Medical Center, Radiation Oncology, Leiden, The Netherlands
[21]VU University Medical Center, Radiation Oncology, Amsterdam, The Netherlands

Purpose or Objective: Pediatric cancer treatment, including radiotherapy (RT) achieves high cure rates, but can cause late health problems. We aim to describe temporal trends of pediatric RT use in the Netherlands based on treatment experience in the DCOG-LATER cohort of five-yr childhood cancer survivors (CCS).

Material and Methods: The Dutch Childhood Oncology Group – Late effects after childhood cancer (DCOG-LATER) is a collaborative effort of all 7 academic paediatric oncology/hematology centres in the Netherlands for optimal patient care and research. The DCOG-LATER cohort includes 6168 five-yr CCS diagnosed 1963-2001 prior to age 18 yrs. Most children were treated according to (inter) national study protocols. Trained data-managers obtained *individual* medical file information on prior cancer diagnosis and treatment including prescribed RT dose, field(s), fractionation schedule, machine and RT technique from data were coded and stored in a web-based database using study coding manuals. Here we summarize trends in RT use by calendar period (1963-1979 vs 1980-2001) and diagnosis group.

Results: In all, 2426 (39%) CCS received external beam RT (EBRT) for a primary tumor or recurrence, most often photons, or, <1989, Cobalt-60. Use of orthovoltage and electrons was limited. Brachytherapy (2%) and radio isotopes (2%) were given, mainly during 1990-2001. RT use decreased substantially for all cancer types; most dramatic changes were seen among CCS of acute lymphoblastic leukemia, Non-Hodgkin lymphoma, neuroblastoma, and nephroblastoma, for whom RT-use declined from 92%, 79%, 59% and 76% (1963-1979), to 15%, 8%, 8%, and 27% (1990-2001), respectively, but also for bone tumors (75%-32%), retinoblastoma (57%-16%), and CNS tumors (82%-47%). Modest declines were seen for CCS of Hodgkin lymphoma (74%-50%), soft tissue sarcomas (57%-36%), and germ-cell tumors (43%-26%). Among 2094 leukemia survivors, 773 had any RT, directed to the cranium (56%), total body (22%), cranio-spinal axis (12%), and testes (4%). Formal trend analyses by childhood cancer type, body compartment, and RT dose will be presented.

Conclusion: The use of RT declined over time for all pediatric cancer types, likely related to improved diagnostic techniques (CT/MRI/pathology) and the introduction of multimodal chemotherapy and enhanced surgical techniques. Temporal changes in treatment exposures document the magnitude of changes, illustrate the heterogeneity of treatment exposures and can be correlated with trends in health outcomes.

Dutch Childhood Oncology Group – Late Effects after Childhood Cancer

Additional members

Aleida Postma[1]
Alida van der Steeg[1,2]
Martha Grootenhuis[1,3]
Hanneke van Santen[3,4]
Andrica de Vries[1,5]
Monique Jaspers[1,6]
Marleen van den Berg[1,7]
Gea Huizinga[1,8]

Patient representative
Jaap den Hartogh[1,9]

Representatives radiation oncology
Irma van Dijk[10]
Peter van der Hulst[11]

[1] Stichting KinderOncologie Nederland (SKION) / Dutch Childhood Oncology Group (DCOG), The Hague, The Netherlands
[2] Pediatric Surgical Center of Amsterdam, Emma Children's Hospital AMC and VU University Medical Center, Amsterdam, The Netherlands
[3] Dept. of Pediatric Psychology, Emma Children's Hospital/Academic Medical Center, Amsterdam, The Netherlands
[4] Dept. of Pediatric Endocrinology, Wilhelmina Children's Hospital/University Medical Center Utrecht, Utrecht, The Netherlands
[5] Dept. of Pediatric Oncology/Hematology, Sophia Children's Hospital/Erasmus Medical Center, Rotterdam, The Netherlands
[6] Dept. of Medical Informatics, Academic Medical Center, Amsterdam, The Netherlands
[7] Dept. of Pediatric Oncology/Hematology, VU University Medical Center, Amsterdam, The Netherlands
[8] Dept. of Pediatric Oncology/Hematology, Beatrix Children's Hospital/University of Groningen/University Medical Center Groningen, Groningen, The Netherlands
[9] Dutch Childhood Cancer Parent Organisation (VOKK), Nieuwegein, The Netherlands
[10] Dept. of Radiation Oncology, Academic Medical Center, Amsterdam, The Netherlands
[11] Dept. of Radiation Oncology, University of Groningen/University Medical Center Groningen, Groningen, The Netherlands

Poster: Clinical track: Palliation

PO-0772

Adequacy of dose volume constraints in stereotactic radiotherapy and radiosurgery of abdominal area

S. Cilla[1], G. Macchia[2], A. Ianiro[1], V. Picardi[2], C. Digesù[2], M. Ferro[2], F. Labropoulos[2], G. Torre[2], M. Nuzzo[2], F. Deodato[2], A. Guido[3], L. Giaccherini[3], L. Manuzzi[3], A. Arcelli[3], D. Balestrini[4], G. Compagnone[5], S. Cammelli[3], M. Campitelli[6], G. Frezza[4], A.G. Morganti[3]
[1]*Fondazione di Ricerca e Cura "Giovanni Paolo II"- Catholic University of Sacred Heart, Medical Physics Unit, Campobasso, Italy*
[2]*Fondazione di Ricerca e Cura "Giovanni Paolo II"- Catholic University of Sacred Heart, Radiation Oncology Unit, Campobasso, Italy*
[3]*S. Orsola-Malpighi Hospital- University of Bologna, Radiation Oncology Center- Department of Experimental- Diagnostic and Specialty Medicine – DIMES, Bologna, Italy*
[4]*Bellaria Hospital, Radiotherapy Department, Bologna, Italy*
[5]*S. Orsola-Malpighi Hospital- University of Bologna, Department of Medical Physics, Bologna, Italy*
[6]*Policlinico Universitario "A. Gemelli"- Catholic University of Sacred Heart, Department of Radiotherapy, Roma, Italy*

Purpose or Objective: To verify the adequacy of dose volume constraints in stereotactic radiotherapy and radiosurgery of abdominal area considering that dose constraints reported in literature are not still validated. This study is based on toxicity recorded in organs at risk (OARs) of patients enrolled in dose-escalation trials and treated in Our Institution.

Material and Methods: Treatment plans of 51 patients (Table 1) who underwent SBRT (30 patients) or SBRS (21 patients) on abdominal neoplasms from March 2007 to May 2014 were retrospectively evaluated. All patients were treated using V-MAT technique. SBRT treatment was delivered in 25-40 Gy in 5 fractions, and 16-30 Gy in single fraction in SBRS treatment. Small intestine and duodenum were the main OARs whose irradiation was virtually limited to 30 Gy in SBRT treatments and 12 Gy in SBRS treatments. Dosimetric data were compared with clinical results in terms of early and late toxicity.